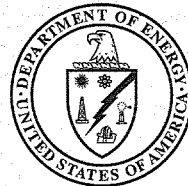


DOE/ID-11011

Revision 0

July 2002



U.S. Department of Energy
Idaho Operations Office

***The 2002 Institutional Controls Inspection,
Environmental Monitoring, and Site
Maintenance Report for Waste Area Group 1***



Idaho National Engineering and Environmental Laboratory

**The 2002 Institutional Controls Inspection,
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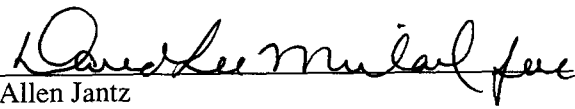
**Prepared for the
U.S. Department of Energy
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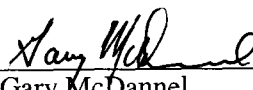
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ABSTRACT

This report presents the results of the annual inspection and maintenance activities at Waste Area Group 1, Test Area North, on the Idaho National Engineering and Environmental Laboratory. The inspection activities fall into three categories: (1) inspections required by the operations and maintenance plan for Operable Unit (OU) 1-10 (DOE-ID 2001a), (2) annual environmental monitoring activities at six specific Comprehensive Environmental Response, Compensation, and Liability Act sites, and (3) inspection activities required by the *Institutional Control Plan for Test Area North Waste Area Group 1* (INEEL 2000). The institutional control inspections are for OUs 1-10 and 1-07B.

CONTENTS

ABSTRACT	iii
1. INTRODUCTION	1
2. PURPOSE AND METHODS OF INSPECTIONS	3
2.1 Purpose	3
2.2 Methods of Inspection	3
2.2.1 Site-Specific Maintenance Inspection	3
2.2.2 Environmental Monitoring	3
2.2.3 Institutionally Controlled Area Inspection	4
3. 2002 INSPECTIONS	5
3.1 Site-Specific Maintenance	5
3.2 Environmental Monitoring	5
3.3 Institutional Control Sites	8
4. REFERENCES	14

FIGURES

1. Locations of INEEL and TAN	2
2. GPRS performing a survey at TSF-26	4
3. Subsidence in a borehole at TSF-03 (photo taken on May 1, 2002)	6
4. Subsidence in borehole at WRRTF-01 (photo taken May 1, 2002)	6
5. Subsidence, 8-in. diameter and 10 in. deep, at WRRTF-01 (photo taken May 1, 2002)	7
6. Repaired subsidence at TSF-03 (photo taken June 26, 2002)	7
7. Repaired subsidence at WRRTF-01 (photo taken June 26, 2002)	8
8. TAN-35 well on May 1, 2002	12
9. TAN-35 well on June 26, 2002	13

TABLES

1.	Inspection of O&M sites at OU 1-10.....	5
2.	Summary of 2002 environmental survey data	8
3.	Institutional control sites inspection	9
4.	Inspection of institutional controls at wells in TSF-23	9

The 2002 Institutional Controls Inspection, Environmental Monitoring, and Site Maintenance Report for Waste Area Group 1

1. INTRODUCTION

Test Area North (TAN) is located in the north-central portion of the Idaho National Engineering and Environmental Laboratory (INEEL) and is approximately 41 ha (102 acres). TAN comprises four facilities: (1) the TAN Technical Support Facility (TSF), (2) the Initial Engine Test (IET) Facility, (3) the Water Reactor Research Test Facility (WRRTF), and (4) the Specific Manufacturing Capability (SMC) Facility/Loss-of-Fluid Test (LOFT) Facility. TAN has been designated Waste Area Group (WAG) 1. Within WAG 1, Operable Unit (OU) 1-10 performs the activities described in this report. Refer to Figure 1 for a map showing the INEEL and the locations of TAN and its four facilities.

TAN was originally built between 1954 and 1961 to support the Aircraft Nuclear Propulsion Program sponsored by the U.S. Air Force and the Atomic Energy Commission. The program objectives were to develop and test designs for nuclear-powered aircraft engines. Upon termination of this research in 1961, the area facilities were converted to support a variety of other Department of Energy research projects. From 1962 through the 1980s, the area supported reactor safety testing at the LOFT Facility. Beginning in 1980, TAN was used to conduct work with material from the 1979 Three-Mile Island reactor accident. This material has been relocated to storage at the Idaho Nuclear Technology and Engineering Center (INTEC).

Current activities at TAN include the manufacture of armor for military vehicles; these manufacturing operations occur at the SMC Facility. Operational activities have ceased at other TAN facilities. Fuel relocation efforts are in progress. Environmental restoration and decommissioning activities are ongoing and will continue in future years.

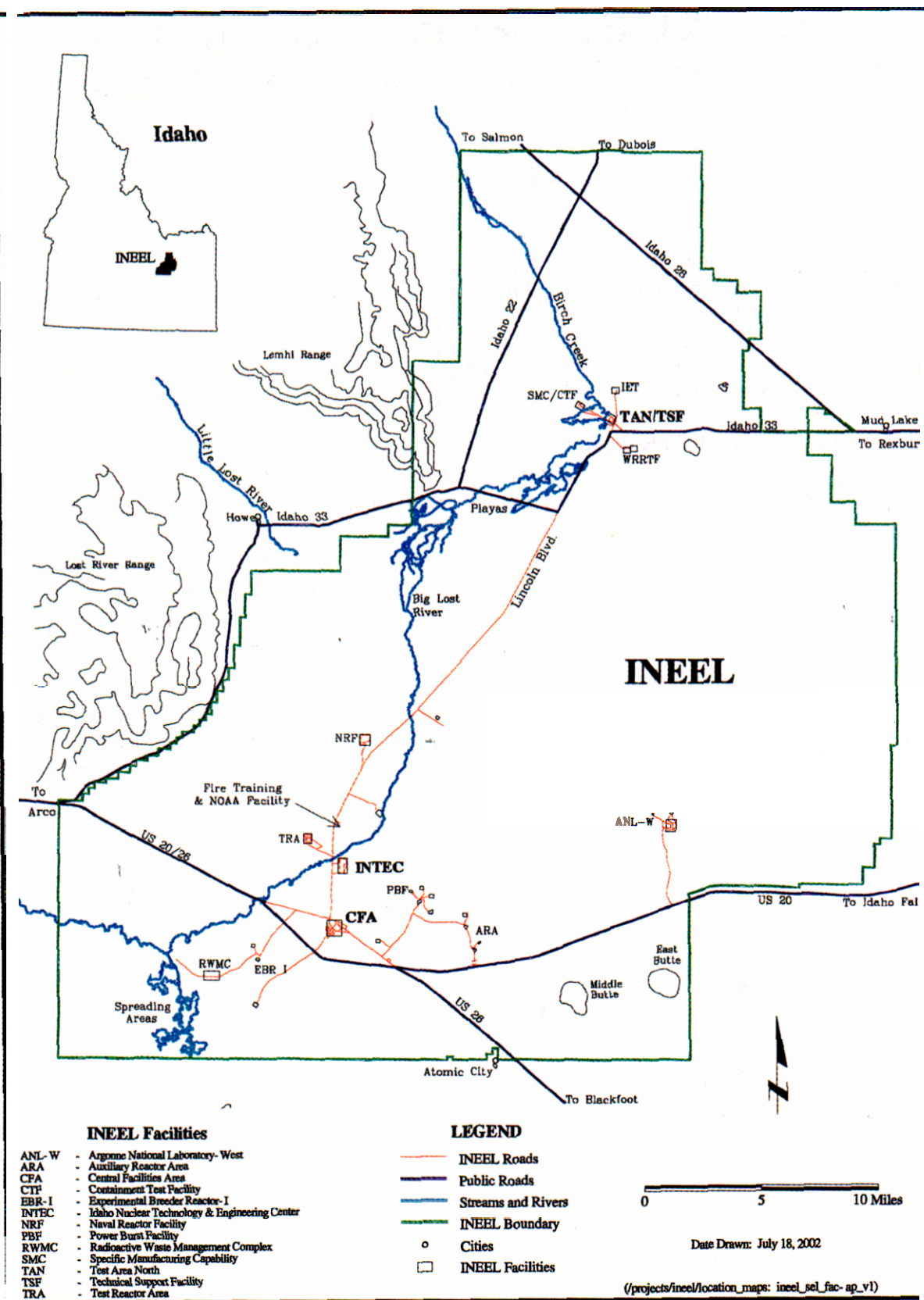


Figure 1. Locations of INEEL and TAN.

2. PURPOSE AND METHODS OF INSPECTIONS

2.1 Purpose

This report presents the results of the following activities:

- Site-specific maintenance inspections
- Inspection of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) signs
- Environmental monitoring at specific sites to determine whether radioactive contaminants have migrated because of wind or other mechanisms
- Inspection of institutionally controlled areas
- Maintenance performed as a result of the above inspections.

Twenty sites at TAN have been designated as requiring institutional controls. The controls were instituted in December 2000, and the sites were inspected in the spring of 2001 and again in the spring of 2002 in accordance with the *Institutional Control Plan for Test Area North Waste Area Group 1* (INEEL 2000). The 2001 inspection was reported in DOE-ID 2001b. The 2001 inspections showed that the sites were in order and required only nominal maintenance activities, such as straightening signs. The 2001 environmental monitoring showed contamination levels barely above background at the required sites.

2.2 Methods of Inspection

2.2.1 Site-Specific Maintenance Inspection

The following sites are specified in the OU 1-10 operations and maintenance (O&M) plan (DOE-ID 2001a) as requiring inspection for soil erosion, soil subsidence, and signs of intrusion: TSF-06 Area B, TSF-26, TSF-03, WRRTF-01, and TSF-09 and -18 (TSF-09 and -18 are near each other and are, therefore, treated as one site for maintenance inspections). No operational activities are scheduled at these sites. Maintenance activities are performed on an as-needed basis.

2.2.2 Environmental Monitoring

Four sites are specified in the OU 1-10 O&M plan (DOE-ID 2001a) as requiring environmental monitoring for radioactive contamination. The sites are TSF-06 Area B, TSF-07, TSF-09 and -18 (treated as one site), and TSF-26. The monitoring is performed using the global positioning radiometric scanner (GPRS). This vehicle-mounted system is used to characterize the extent of gamma-emitting radionuclide contamination in surface soil. Cs-137 contamination is the primary gamma-emitting contamination at the sites surveyed. The GPRS system, shown in Figure 2, consists of two large-area scintillation radiation detectors mounted on the front of an all-terrain vehicle equipped with global positioning system navigation instruments.

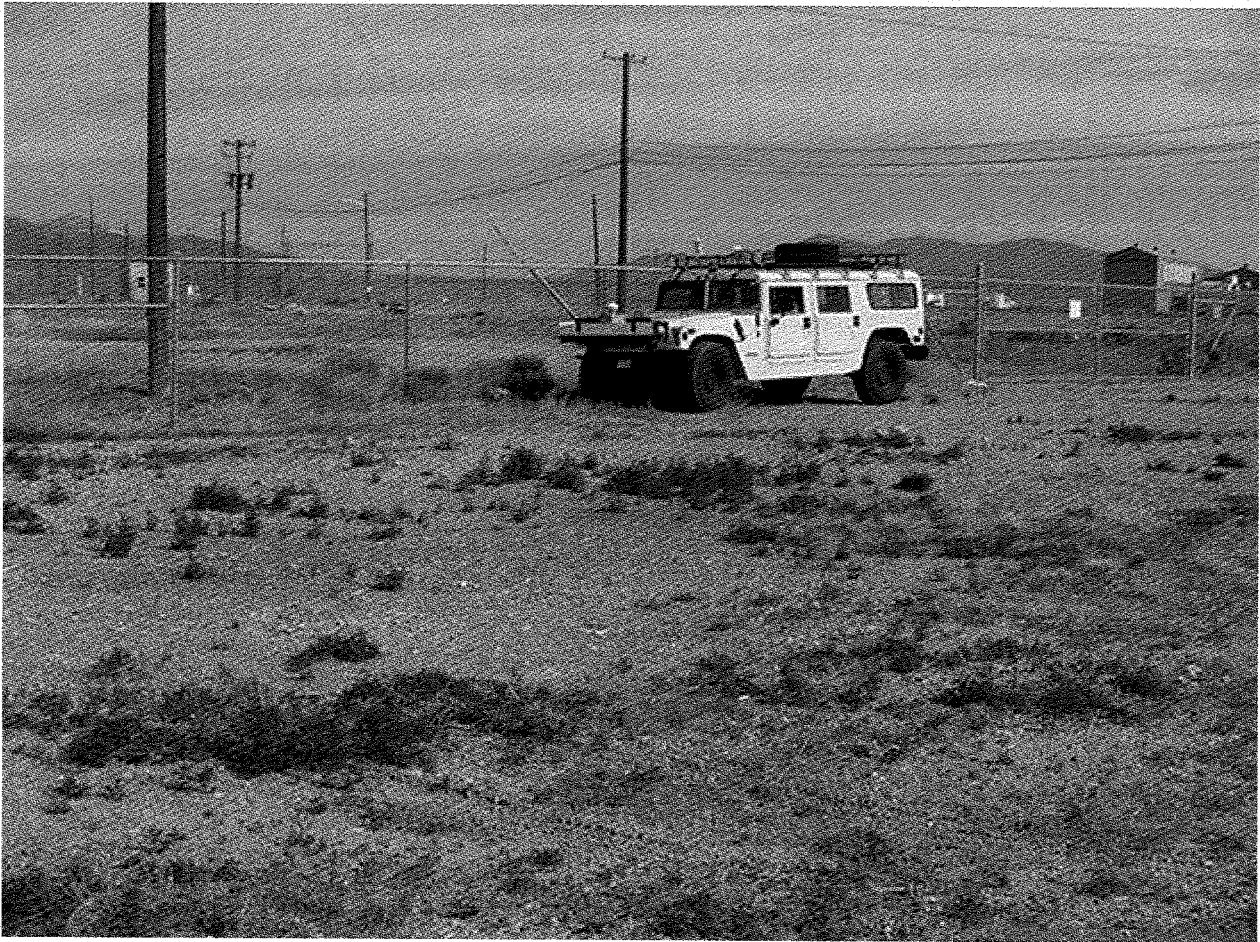


Figure 2. GPRS performing a survey at TSF-26.

2.2.3 Institutionally Controlled Area Inspection

Twenty institutionally controlled areas require inspection at TAN. They are IET-04, TSF-03, TSF-05, TSF-06 Area 1, TSF-06 Area 5, TSF-06 Area 11, TSF-06 Area B, TSF-07, TSF-08, TSF-09, TSF-10, TSF-18, TSF-23, TSF-26, TSF-28, TSF-29, TSF-39, TSF-42, TSF-43, and WRRTF-01. The areas are inspected for the presence and condition of signs, the general condition of the site, and the effectiveness of controls, such as radiation work permits (RWPs).

Two sites, TSF-05 and -23, are maintained as part of OU 1-07B. Inspection and maintenance of the institutional controls at these sites are performed with the OU 1-10 institutional control sites. The TSF-05 and -23 sites are associated with the groundwater contamination beneath TAN, and numerous associated wellheads and well houses require inspection (see Section 3.3).

3. 2002 INSPECTIONS

Inspections were performed on May 1, 2002, by D. Renee Fitch, a knowledgeable representative of WAG 1, who had performed the inspection the previous year. Environmental monitoring was performed on June 18, 2002. The methods of inspections as well as results of the inspections are discussed here.

3.1 Site-Specific Maintenance

The inspection of TSF-06 Area B, TSF-09 and -18, TSF-26, TSF-03, and WRRTF-01 for soil erosion, soil subsidence, and signs of intrusion was performed on May 1, 2002. The findings were recorded and are available for inspection in the WAG 1 project files. Table 1 provides the observations of maintenance sites made in 2002 and compares them to the 2001 results.

The subsidences found in boreholes at WRRTF-01 and TSF-03 were photographed, and Figure 3 shows subsidence in a borehole at TSF-03. Figures 4 and 5 show boreholes at WRRTF-01.

Corrective action was completed at WRRTF-01 and TSF-03 on May 30, 2002, when maintenance personnel used heavy equipment to move clean fill from adjacent borrow sources to fill the subsided boreholes and to contour them to match the surrounding area. The repairs were photographed on June 26, 2002, and Figure 6 shows a repaired area at TSF-03. Figure 7 shows a repaired area at WRRTF-01.

Table 1. Inspection of O&M sites at OU 1-10.

Site	Signs of Intrusion	Subsidence/Erosion	Signs in Place and Readable	Change from 2001 Inspection
Soil Contamination Area TSF-06 Area B	No intrusion	None	Yes	None
V-Tanks TSF-09 and -18	No intrusion	None	Yes	None
PM2A Tanks Area TSF-26	No intrusion	None	Yes	None
Burn Pits TSF-03/WRRTF-01	No intrusion	Subsidences noted in boreholes at WRRTF-01 and subsidence at TSF-03	Yes	Evidence of minor subsidence in some boreholes at WRRTF-01 and TSF-03

3.2 Environmental Monitoring

Environmental monitoring was performed on May 13, 2002, by surveying the perimeter of TSF-06 Area B, TSF-07, TSF-09 and -18, and TSF-26 using the GPRS. The 2002 survey results showed no significant change from the 2001 survey. No indication of windblown contamination was detected. The maximum activity measured in 2002 at all of the locations surveyed was 8,387 counts per second, which converts to 0.101 mrem/hr, measured along the perimeter of TSF-09. The maximum activity in 2001, measured at the same location, was 9,583 counts per second. This difference is within the expected variation. Results of the survey are available in the WAG 1 project files. Table 2 summarizes the results of the 2002 survey.



Figure 3. Subsidence in a borehole at TSF-03 (photo taken on May 1, 2002).

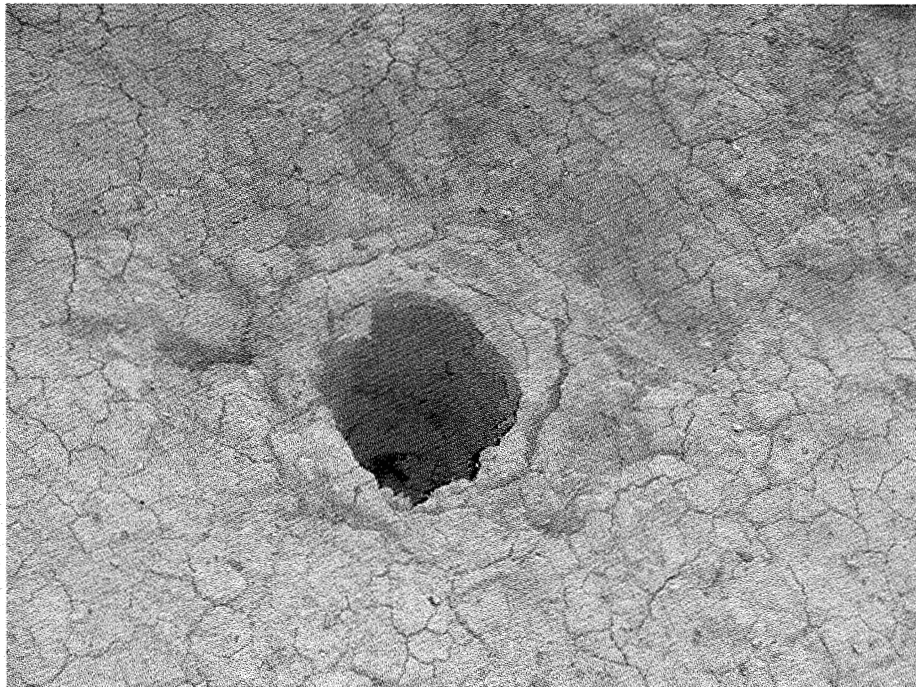


Figure 4. Subsidence in borehole at WRRTF-01 (photo taken May 1, 2002).



Figure 5. Subsidence, 8-in.diameter and 10 in. deep, at WRRTF-01 (photo taken May 1, 2002).



Figure 6. Repaired subsidence at TSF-03 (photo taken June 26, 2002).

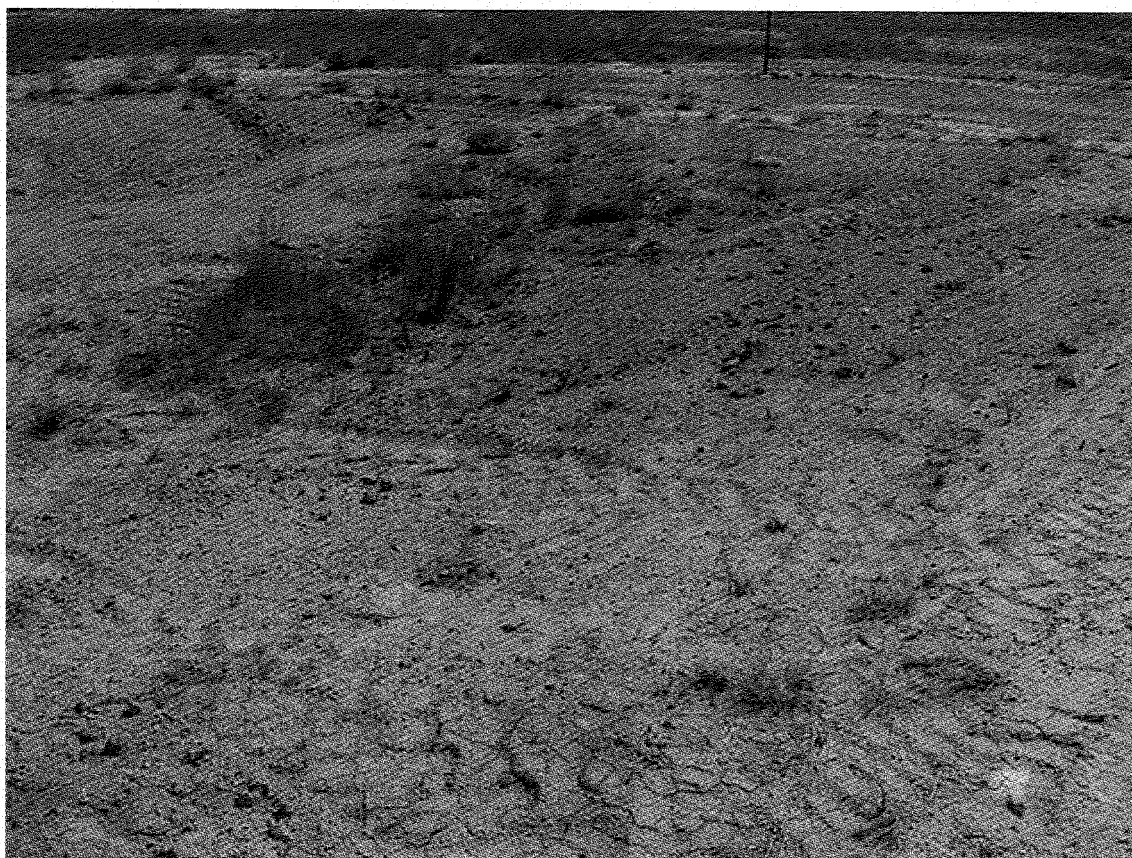


Figure 7. Repaired subsidence at WRRTF-01 (photo taken June 26, 2002).

Table 2. Summary of 2002 environmental survey data.

Location	Maximum Value		Minimum Value		Standard Deviation (counts/sec)
	Counts/sec	mrem/hr	Counts/sec	mrem/hr	
TSF-09/18	8,387	0.101	811	0.009	1,723
TSF-07	1,115	0.013	434	0.005	112
TSF-26	7,691	0.092	734	0.008	1,632
TSF-06, Area B	5,929	0.071	504	0.006	751

3.3 Institutional Control Sites

The inspection of the 20 institutional control sites at WAG 1 on May 1, 2002, showed no maintenance or upkeep was needed. Some signs required straightening. A few signs at TSF-07 were cleaned to improve visibility of the map. Table 3 lists the sites inspected for institutional controls.

Table 3. Institutional control sites inspection.

Site	Signs	Work Control	Actions Needed
WRRTF-01	Good condition	N/A	None
TSF-05 Well House	Good condition	N/A	None
TSF-28 Sewage Plant	Good condition	N/A	None
TSF-26 PM2A Site	Good condition	RWP required; gates locked	None
Tsf-10 Disposal Pond	Good condition	N/A	None
TSF-06 Area B	Good condition	RWP required; fence	None
TSF-08 Mercury Site	Good condition	N/A	None
TSF-09	Good condition	RWP required; fence	None
TSF-18	Good condition	RWP required; fence	None
TSF-06 Area 1	Good condition	RWP required; fence	None
TSF-43	Good condition	RWP required; fence	None
TSF-29 Acid Pond	Good condition	RWP required; fence	None
TSF-06 Area 11	Good condition	RWP required; fence	None
TSF-06 Area 5	Good condition	RWP required; fence	None
TSF-42	Good condition	RWP required	None
TSF-39	Good condition	N/A	None
TSF-03	Good condition	Need gate key to access	None
IET-04	Good condition	Need two gate keys to access	None
TSF-07	Good condition	RWP required; fence	None
TSF-23	See Table 4 for visiting of wells at this site		

The “Institutionally Controlled Area” signs at TSF-23 wells and wellheads, including TSF-05, were inspected on May 1, 2002. The condition of the institutional control signs was recorded. The wells or well houses inspected are listed in Table 4.

Table 4. Inspection of institutional controls at wells in TSF-23.

Well Number	2001 Inspection	2002 Inspections	Notes
ANP-8	Sign in good order	Sign in good order	
GIN-1	Sign in good order	Sign in good order	
GIN-2	Sign in good order	Sign in good order	
GIN-3	Sign in good order	Sign in good order	
GIN-4	Sign in good order	Sign in good order	

Table 4. (continued).

Well Number	2001 Inspection	2002 Inspections	Notes
GIN-5	Sign in good order	Sign in good order	
TAN-1	Sign in good order	Sign in good order	
TAN-2	Sign in good order	Sign in good order	
TAN-3	Sign in good order	Sign in good order	
TAN-4	Sign in good order	Sign in good order	
TAN-5	Sign in good order	Sign in good order	
TAN-6	Sign in good order	Sign in good order	
TAN-7	Sign in good order	Sign in good order	
TAN-8	Sign in good order	Sign in good order	
TAN-35	Sign in good order	Sign in good order	
TAN-9	Sign in good order	Sign in good order	
TAN-10	Sign in good order	Sign in good order	
TAN-10A	Sign in good order	Sign in good order	
TAN-11	Sign in good order	Sign in good order	
TAN-12	Sign in good order	Sign in good order	
TAN-13A	Sign in good order	Sign in good order	
TAN-14	Sign in good order	Sign in good order	
TAN-15	Sign in good order	Sign in good order	
TAN-16	Sign in good order	Sign in good order	
TAN-17	Sign in good order	Sign in good order	
TAN-18	Sign in good order	Sign in good order	
TAN-19	Sign in good order	Sign in good order	
TAN-20	Sign in good order	Sign in good order	
TAN-21	Sign in good order	Sign in good order	
TAN-MW-2	Sign in good order	Sign in good order	
TAN-22A	Sign in good order	Sign in good order	
TAN-23A	Sign in good order	Sign in good order	
TAN-24A	Sign in good order	Sign in good order	
TAN-25	Sign in good order	Sign in good order	
TAN-26	Sign in good order	Sign in good order	
TAN-27	Sign in good order	Sign in good order	
TAN-28	Sign in good order	Sign in good order	
TAN-29	Sign in good order	Sign in good order	

Table 4. (continued).

Well Number	2001 Inspection	2002 Inspections	Notes
TAN-30A	Sign in good order	Sign in good order	
TAN-31	Sign in good order	Sign in good order	
TAN-32	Sign in good order	Sign in good order	
TAN-33	Sign in good order	Sign in good order	
TAN-34	Sign in good order	Sign in good order	
TAN-35	No sign; drill rig over well	No sign; drill rig over well	Site cleared and sign placed in early June 2002
TAN-36	Sign in good order	Sign in good order	
TAN-37	Sign in good order	Sign in good order	
TAN-38	Sign in good order	Sign in good order	
TAN-39	Sign in good order	Sign in good order	
TAN-40	Sign in good order	Sign in good order	
TAN-41	Sign in good order	Sign in good order	
TAN-42	Sign in good order	Sign in good order	
TAN-43	Sign in good order	Sign in good order	
TAN-44	Sign in good order	Sign in good order	
TAN-45	Sign in good order	Sign in good order	
TAN-46	Sign in good order	Sign in good order	
TAN-47	Sign in good order	Sign in good order	
TAN-48	Sign in good order	Sign in good order	
TAN-49	Sign in good order	Sign in good order	
TAN-50	Sign in good order	Sign in good order	
TAN-51	Sign in good order	Sign in good order	
TAN-52	Sign in good order	Sign in good order	
TAN-53A	Sign in good order	Sign in good order	
TAN-54	Sign in good order	Sign in good order	
TAN-55	Sign in good order	Sign in good order	
TAN-56	Sign in good order	Sign in good order	
TAN-57	Sign in good order	Sign in good order	
TAN-58	Sign in good order	Sign in good order	
TAN-CH1	Sign in good order	Sign in good order	
TAN-CH2	Sign in good order	Sign in good order	
TSF-05	Sign in good order	Sign in good order	

Table 4. (continued).

Well Number	2001 Inspection	2002 Inspections	Notes
USGS-24	Sign in good order	Sign in good order	
TAN-D1 (Drainage Disposal)	Sign in good order	Sign in good order	
TAN-D2 (Drainage Disposal)	Sign in good order	Sign in good order	

During the inspection, it was noted that the TAN-35 well is completely wrapped in plastic and tape with a drilling rig nearby. The institutional control sign had not been placed at this site, because no representatives of the owner, the University of Idaho, have been present and the well is inaccessible. This condition was consistent with the 2001 inspection.

It was noted that University of Idaho personnel visited well site TAN-35 in late May 2002 and cleared the area of their equipment. The wellhead was uncovered, and the drill rig was removed. TAN maintenance then capped and locked the well, and the institutional control sign was placed on the well. This activity results in all of the wellheads at TSF-23 being in compliance with institutional controls. Figures 8 and 9 show the TAN-35 site at the time of the annual inspection and after the cleanup. A complete photo log of the 2002 inspection is maintained in the WAG 1 project files.

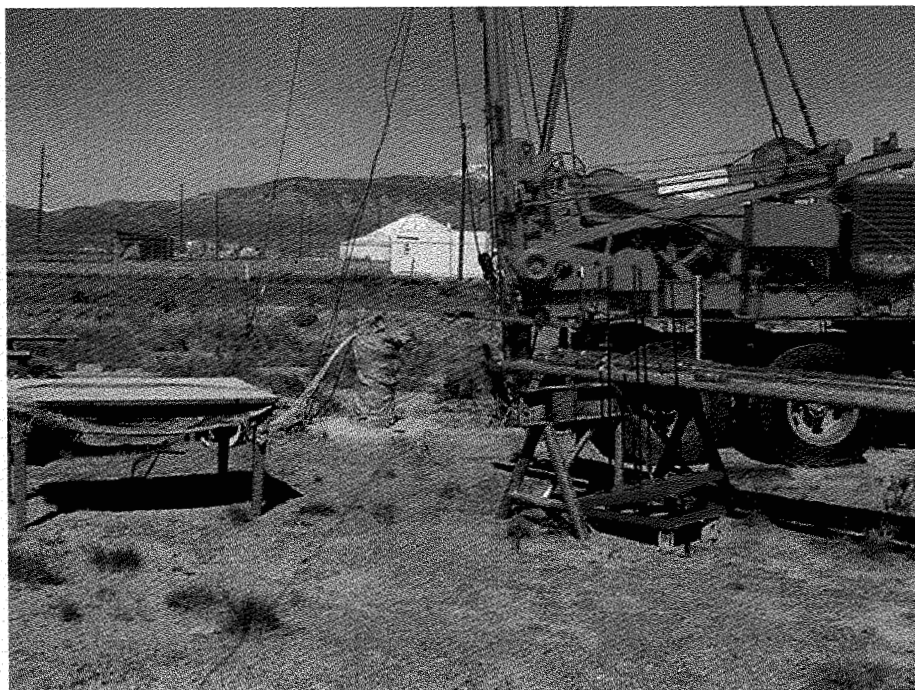


Figure 8. TAN-35 well on May 1, 2002.



Figure 9. TAN-35 well on June 26, 2002.

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- DOE-ID, 2001a, *Operations and Maintenance Plan for Test Area North, Operable Unit 1-10*, DOE/ID-10711, Rev. 1, U.S. Department of Energy Idaho Operations Office, November 2001.
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